

ETCHING OPENINGS OF DIFFERENT DEPTHS USING A SINGLE MASK LAYER METHOD AND STRUCTURE

Abstract

A semiconductor device with openings of differing depths in a substrate or layer is described, as are related methods for its manufacture. Through selective deposition of a single mask layer, whereby low aspect ratio openings are substantially coated while high aspect ratio are at most partially coated, subsequent etching of the substrate or layer is restricted to uncoated portions of the high aspect ratio openings. The result is a substrate or layer with openings of more than one depth using a single mask layer. In a second embodiment, the selective deposition of a single mask layer is utilized to etch a layer while protecting underlying structures from etching. In a third embodiment, the selective deposition of a single mask layer is utilized to etch an opening into a layer wherein the opening has a sub-lithographic diameter, i.e., the diameter of the opening is smaller than can be achieved with the particular lithographic technique employed.